REMARKS

This communication responds to the Office Action mailed on August 9, 2007. Claims 42-50 are amended. Claims 1-41 are canceled. No claims are added. As a result, claims 42-50 are now pending in this Application.

Interview Summary

The Applicant would like to thank the current Examiner, Ms. Tonia Meonske, for the courtesy of a telephone interview conducted on September 5, 2007 with the Applicant's representative, Mark V. Muller, and inventor Dr. Lizy John. During the interview, potential amendments to the pending claims were discussed, and their substance was recorded by Examiner Meonske in the Interview Summary mailed to the Applicant on September 11, 2007.

Like Examiner Meonske, the Applicant was unable to locate Examiner Vincent Lai's summary of a prior interview conducted with Examiner Lai on April 19, 2007. The only summary of this interview in existence appears to be that made by the Applicant and submitted as part of the office action response electronically filed with the Patent Office on April 20, 2007.

The present amendments have been made for purposes of clarity, and not for reasons related to patentability. Specific support for the amended language will be set forth below.

§102 Rejection of the Claims

Claims 42-50 were rejected under 35 U.S.C. § 102(b) for anticipation by Li et al., Improving Branch predictability in Java Processing (hereinafter "Li"). The Applicant does not admit that Li is prior art and reserves the right to swear behind this reference at a later date. In addition, because the Applicant does not believe the Office has established a proper *prima facie* case of anticipation with respect to the amended claims, this rejection of the claims is respectfully traversed.

Claims 42-50 have been amended to recite the presence of an "agree branch predictor" (claims 42-44), a "multi-hybrid branch predictor" (claims 45-47), and a "bi-mode branch predictor" (claims 48-50). Each branch predictor, in turn, includes at least two branch history shift registers to store branch history information associated with divisions between user

instructions/operating system instructions, or first/second operating contexts, respectively. Finally, claims 43-44, 46-47, and 49-50 include a Gshare branch predictor.

Specific support for the elements recited in claims 42-43, 45-46, and 48-49 can be found in paragraphs 31 and 49 of the Application, as-filed. Specific support for the elements recited in claims 44, 47, and 50 can be found in paragraphs 6, 31, and 49 of the Application, as-filed. More specifically, the presence of a split branch history shift register predictor implemented as part of an agree branch prediction apparatus, a multi-hybrid branch prediction apparatus, and a bi-mode branch prediction apparatus (perhaps implementing a Gshare component) that operates to partition operating context branch histories is described in the Application as follows:

> "As mentioned previously, OS-aware prediction techniques may be integrated with other predictors. For example, Multi-Hybrid, Agree, and Bi-Mode schemes do contain mechanisms tailored for branches with heterogeneous characteristics and/or de-aliasing. All these predictors may contain a Gshare predictor and/or Gshare indexing. To integrate the proposed mechanisms, a conventional Gshare component may be replaced with the proposed OS-aware (split-BHSR Gshare) split BHSR predictor 152 and/or the (split Gshare) split BHT predictor 154. ... Some embodiments, such as those having a split BHSR predictor 152 (see FIG. 1A), may be constructed so as to separate the BHSRs. In some embodiments, including those having a split BHT predictor 154 (see FIG. 1B), partitioning of the BHT 137 between user code and OS code or kernel code may occur statically, or may happen dynamically (e.g., as needed)." Application, paras. [0031] – [0032].

To further support the structure recited in the claims, FIG. 1C, taken from provisional application serial number 60/462,513 (from which the instant Application claims priority, and which the instant Application incorporates by reference in its entirety) has also been added to show that the branch history shift register and branch history table can be replaced by split branch history shift registers and split branch history tables as part of an OS-aware Gshare predictor in the agree, multi-hybrid, and bi-mode predictor structures. The text of the specification has been amended to note the presence of FIG. 1C, and to briefly describe its visual content. If the Examiner would like additional supporting material added to the instant Application, the Applicant welcomes the opportunity to do so. No new matter has been added.

The Applicant was unable to find any evidence of a split branch history shift register predictor implemented as part of an agree branch prediction apparatus, a multi-hybrid branch prediction apparatus, or a bi-mode branch prediction apparatus within the bounds of Li. Therefore, since Li does not teach the identical invention claimed by the Applicant, a *prima facie* case of anticipation has not been properly established, and claims 42-50 should be in condition for allowance. Reconsideration and withdrawal of the rejections under 35 U.S.C. § 102(b) is respectfully requested.

RESERVATION OF RIGHTS

In the interest of clarity and brevity, the Applicant may not have addressed every assertion made in the Office Action. The Applicant's silence regarding any such assertion does not constitute any admission or acquiescence. The Applicant reserves all rights not exercised in connection with this response, such as the right to challenge or rebut any tacit or explicit characterization of any reference or of any of the present claims, the right to challenge or rebut any asserted factual or legal basis of any of the rejections, the right to swear behind any cited reference such as provided under 37 C.F.R. § 1.131 or otherwise, or the right to assert co-ownership of any cited reference. The Applicant does not admit that any of the cited references or any other references of record are relevant to the present claims, or that they constitute prior art. To the extent that any rejection or assertion is based upon the Examiner's personal knowledge, rather than any objective evidence of record as manifested by a cited prior art reference, the Applicant timely objects to such reliance on Official Notice, and reserves all rights to request that the Examiner provide a reference or affidavit in support of such assertion, as required by MPEP § 2144.03. The Applicant reserves all rights to pursue any cancelled claims in a subsequent patent application claiming the benefit of priority of the present patent application, and to request rejoinder of any withdrawn claim, as required by MPEP § 821.04.

CONCLUSION

The Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the Applicant's attorney at (210) 308-5677 to discuss further amendment if needed, and to facilitate prosecution of this Application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(210) 308-5677

Date: October 4, 2007

By /Mark V. Muller/
Mark V. Muller
Reg. No. 37,509

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner ~~of Patents~~, P.O. Box 1450, Alexandria, VA 22313-1450 on this 4th day of October 2007.

PATRICIA A. HULTMAN

Name

Signature

APPENDIX I

Page From

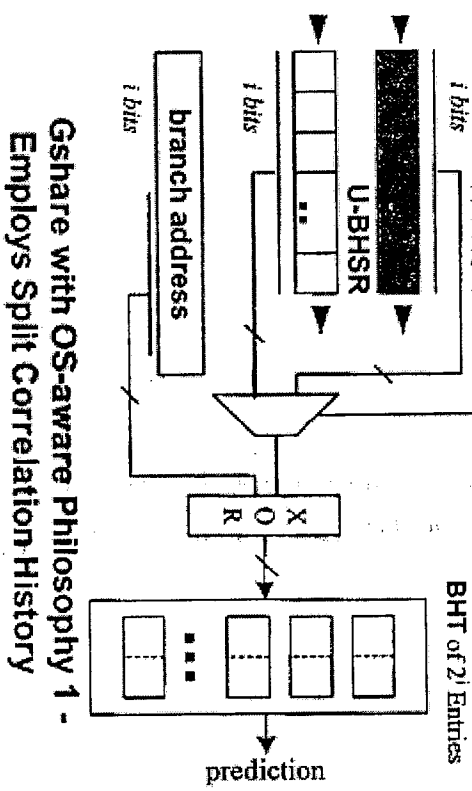
Provisional Patent Application

Number 60/462,513

Proposed Architectural Enhancement

OS-aware Branch Predictor

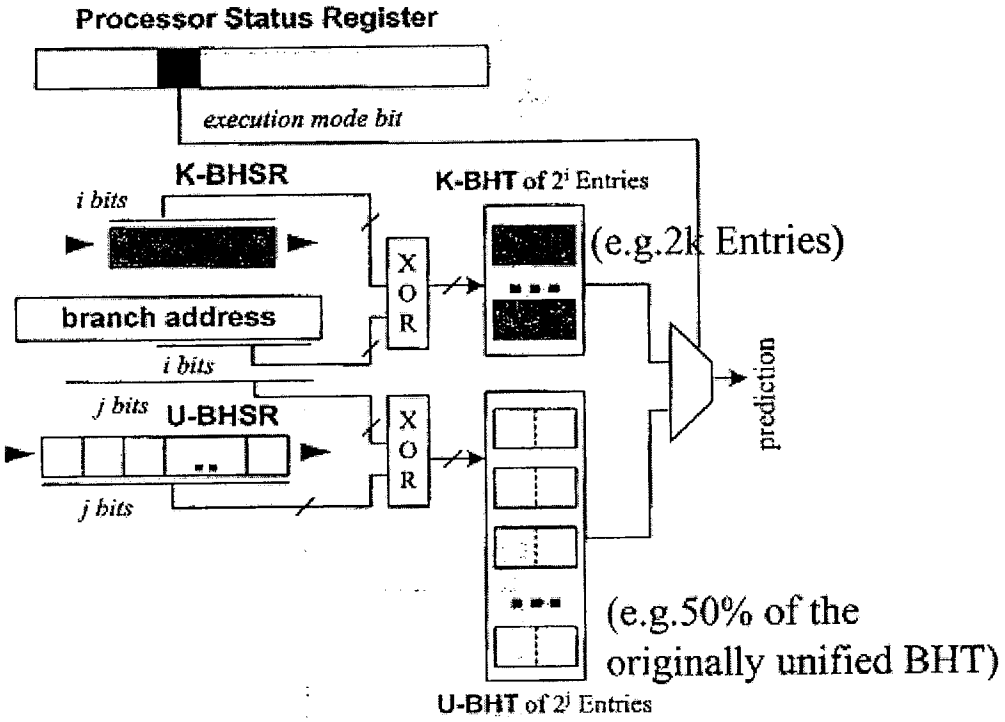
- Philosophy 1: employs split correlation history



Gshare with OS-aware Philosophy 1 - Employs Split Correlation History

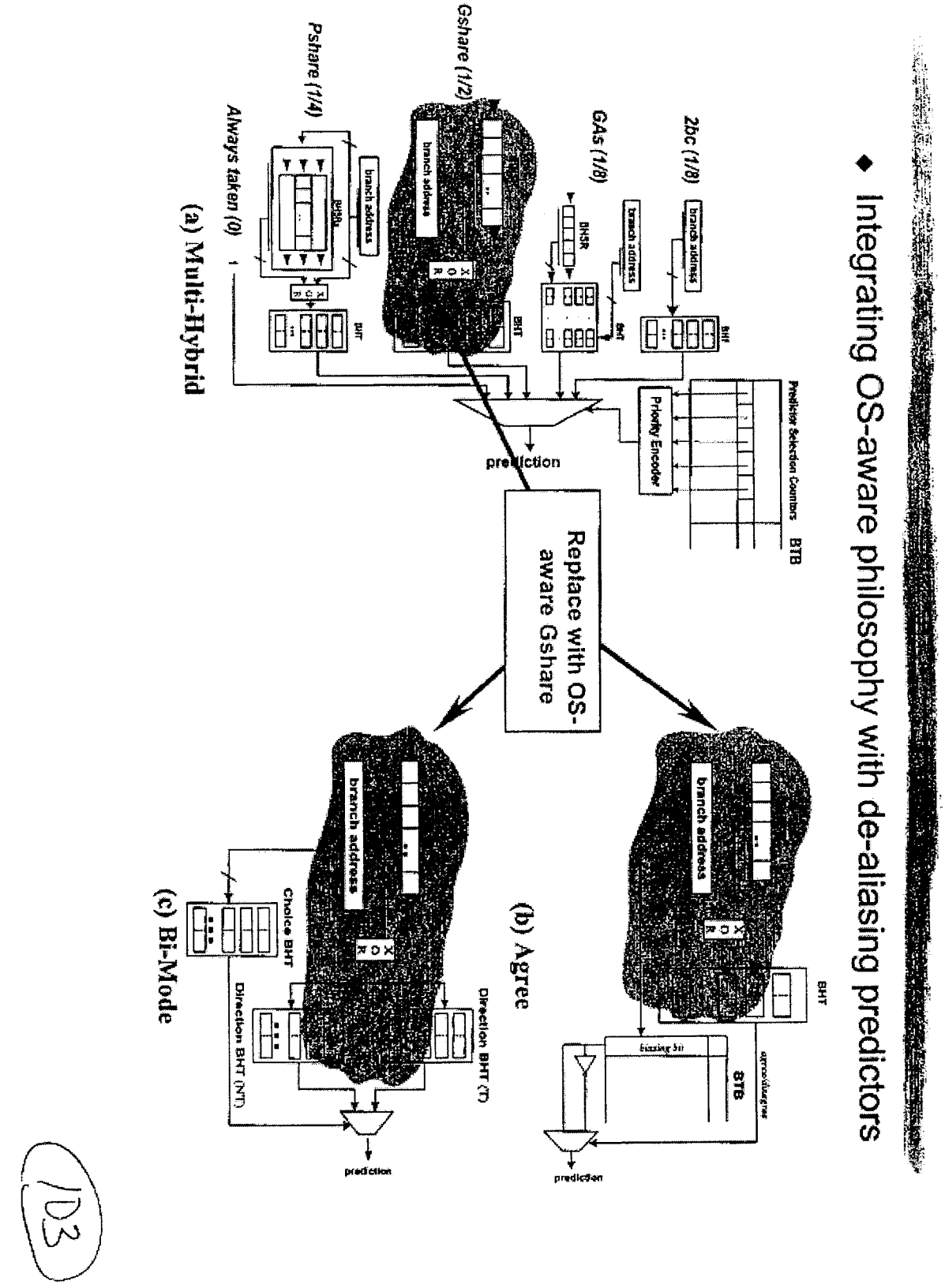
88

- Philosophy 2: employs Split BHTs



Gshare with OS-aware Philosophy 2-Employs Split BHTs

89


◆ Integrating OS-aware philosophy with de-aliasing predictors
Gshare (1/2)
Pshare (1/4)
Always taken (0)
GAs (1/8)
2bc (1/8)
branch address
BHSR
BHT
BHT
Priority Encoder
Predictor Selection Counters
BTB
prediction
(a) Multi-Hybrid
Replace with OS-aware Gshare
(b) Agree
BHT
BTB
prediction
(c) Bi-Mode
Choice BHT
Direction BHT (NT)
Direction BHT (T)
prediction

ID3